BAT SURVEY & REPORT
at
Common Road
Brierley
Barnsley
South Yorkshire
S72 9EA

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1. Introduction

1.1 Purpose of the Report

1.1.1 A report is required at **Common Road, Brierley,** to assess the sites potential for supporting bat species in the form of roosting sites, foraging habitat and/or commuting routes.

1.1.2 The aim of this report is to investigate the potential impact that any proposed development may have on the local/ national bat population.

1.2 Terms of Reference

1.2.1 I am instructed by **Mrs Sue Wright** to visit the site and prepare my findings in a report. For this purpose I have been supplied with a site map.

1.3 Scope of the Report

1.3.1 This report is compiled in accordance with the Bat Conservation Trusts (BCT) '*Bat Surveys - Good Practice Guidelines*' (2nd Edition), the Joint Nature Conservation Committee (JNCC) '*Bat Workers Manual*' (3rd Edition) and Natural England's '*Bat Mitigation Guidelines*'.

1.4 Site Description

1.4.1 The Old Quarry site is located within the village of Brierley, situated approximately 8.2km northeast of Barnsley town centre, at grid reference SE 413 110.

1.4.2 The site is surrounded by a mix of residential land, parkland, agricultural land and woodland patches. The surrounding residential land consists primarily of semi-detached with small garden spaces, containing the occasional mature tree. The surrounding agricultural land consist primarily of large arable fields enclosed by hedgerows and scattered mature trees. Roughly 70m southwest of the site is a small area of broad-leaved woodland, bordering a small stream, which runs roughly north to south and is lined with mature broad-leaved trees. This stream flows through a larger area of woodland to the south, roughly 0.65km from the site, and connects to a series of man-made pond roughly 1.2km south. Several large wooded areas are present in the wider landscape, approximately; 1.2km west, 2.3km east, 2.3km southeast and 2.3km south. These can all be seen as connected to the site by the network of agricultural hedgerows.

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2. Desktop Study

2.1 Methodology

2.1.1 A desktop study has been undertaken in order to obtain any relevant records of bats within a 1 km radius of the site. For this the South Yorkshire Bat Group was contacted and the National Biodiversity Network (NBN) Gateway website utilised.

2.1.2 The National Biodiversity Network (NBN) Gateway website was used to obtain any bat records that were recorded within the last 10 years, relating to this site. The NBN gateway website holds ecological records collected across the UK from a variety of sources and is available for public use. The website operates by dividing the country into a series of 10 km square grids, and so the records held for the 10 km grid containing the survey site (Grid SE41) has been reviewed.

2.2 Results

2.2.1 SYBG records: A summary of the bat records obtained for Common Road can be seen in the table below. **Table 1:** Summary of SYBG data search results for Common Road.

Common Name	Latin Name	No. of records	Most recent record
Unknown bat species	*Chiroptera sp.*	2	2005

A total of 1 bat record was uncovered for a 1km radius around the site, during 2005 to date. This record included; 2 roosts in the roof of a property nearby. This is a very low occurrence.

2.2.2 NBN Gateway: The NBN Gateway records obtained for this site can be seen in the table below.

Table 2: Summary of NBN Gateway data search results for Common Road.

Common Name	Latin Name	No. of records	Most recent record
Common Pipistrelle	*Pipistrellus pipistrellus*	18	2010
Nathusius Pipistrelle	*Pipistrellus nathusii*	1	2010

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3. Scoping Survey

3.1 Survey Conditions

3.1.1 The site was surveyed on 5th September 2012.

3.1.2 The weather conditions during this survey were as follows: Temperature: 13°C, Precipitation: None.

3.1.3 Limitations: There were no perceived limitations to this survey.

3.2 Methodology

3.2.1 A detailed search of the site was conducted during daylight hours in order to identify potential bat roosting sites and look for any evidence of bat activity. Potential roost sites and features deemed to be of value to bats were documented on the site map (please refer to **Appendix 1**) and photographic evidence was taken (please refer to **Appendix 2**).

3.2.2 All surveys are conducted by experienced surveyors using the following equipment to ensure an accurate assessment; a printed site map, camera, 1 million candlelight torch, binoculars, ladders and a duet heterodyne bat detector.

3.2.3 Signs that bats have previously or are currently using a potential roost site include:

- Scratch marks, urine and oils stains around holes in building or trees.
- Droppings, carcasses and/or food remains found around the site.
- Bats observed flying in/out of a hole in a building or tree.
- Bats heard 'chattering' within a potential roost site, especially on warm summer days.

3.2.4 It must be highlighted that the absence of any of these signs is not proof that the site is not being used by bats. Weathering and other factors will often remove any signs of bat activity, especially when present on the exterior of a building or a tree.

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3.3 Results

3.3.1 Exposed Quarry Walls:

The site is an old Stone Quarry which had been inactive for a long period of time. The site in level with Common Road to the southeast and then slopes steeply down toward the north-western boundary. Several exposed stone cliff faces are present along part of the western, northern and eastern boundaries. These reach up to around 15m high along the northern boundary. Several large, deep cracks/fissures are present within the walls of the cliff face, which extend for several meters into the cliff (please see Target note 1 in **Appendix 1**). All of these cracks were covered in cobwebs at the time of the surveys, indicating no recent bat activity. A number of these cracks were densely covered in vegetation, forming a physical barrier over the entrance (please see Target note 3 in **Appendix 1**). A crack was noted in the cliff face along the eastern boundary, which was shallow and unsuitable for bats (please see Target note 4 in **Appendix 1**). Due to past quarry activities, the north-western half of the site was at a lower ground level than the surrounding land and surrounded on all sides by significant trees. This depression is therefore likely to have a more stable environment during the winter period, thus providing the right environmental conditions for hibernating bats. The cracks/fissures within the cliff face have therefore been deemed to have a moderate potential for being used as a bat hibernacula.

3.3.2 Trees:

A large number of mature broadleaved trees were present on site; including Ash, Oak, Walnut, Sycamore and Apple (please see **JCA Report 9900/AW** for further details). The largest trees were located along the top of the cliff face: along the north, east and west boundaries but these will not be affected by the proposals. A cavity was present in the buttress of an Oak tree growing on top of the cliff face to the west (please see Target note 2 in **Appendix 1**). This cavity contained no signs of bat activity.

3.3.3 Habitats on site:

The site contains a mix of young to mature broad-leaved trees, tall ruderal and scrub vegetation. The site is therefore likely to support very occasional foraging bats. However, due to the sites small size, it is highly unlikely to support many bats.

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4. Conclusions

4.1 A bat scoping survey was conducted at the Old Quarry site on Common Road**,** on the 5th September 2012.

4.2 No signs of current or historic bat roosting was found within any part of the site.

4.3 The habitats present on site are also thought to provide foraging habitat for the occasional local bat. However, due to the sites small size, it is unlikely to support many bats.

4.4 A data search was conducted, using the following resources; the Bat Conservation Trust (please see **Section 2** and accompanying data search reports).

From these data searches records of **1** species of unidentified bat were uncovered within a 1-2 km search radius of the site, well away from the subject quarry.

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5. Recommendations & Mitigation

5.1 The cracks/fissures within the cliff face, mostly towards the north western corner of the site, have been deemed to have a **moderate** potential for supporting hibernating bats.

5.2 Given that the potential for bats hibernating within this site is only within the old quarry face and given that this will be well away from the development I see no reason to carry out any further winter surveys. Should planning permission be permitted on other sections of the site, the possible effects of the development on the sites micro-climate should be fully considered.

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Appendices

Appendix 1: Site Plan

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Appendix 2: Photographic Evidence



Photo 1: A view of the tree cavity described in Target 2.

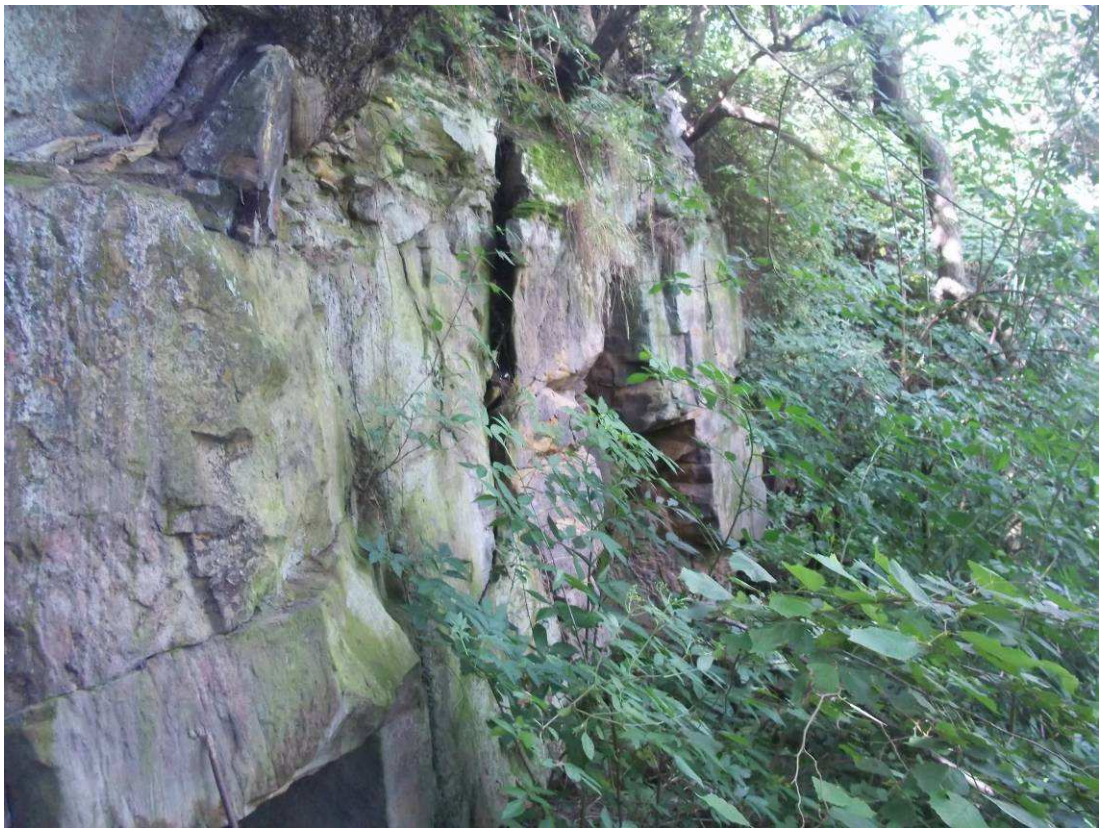


Photo 2: A view of the western cliff face.

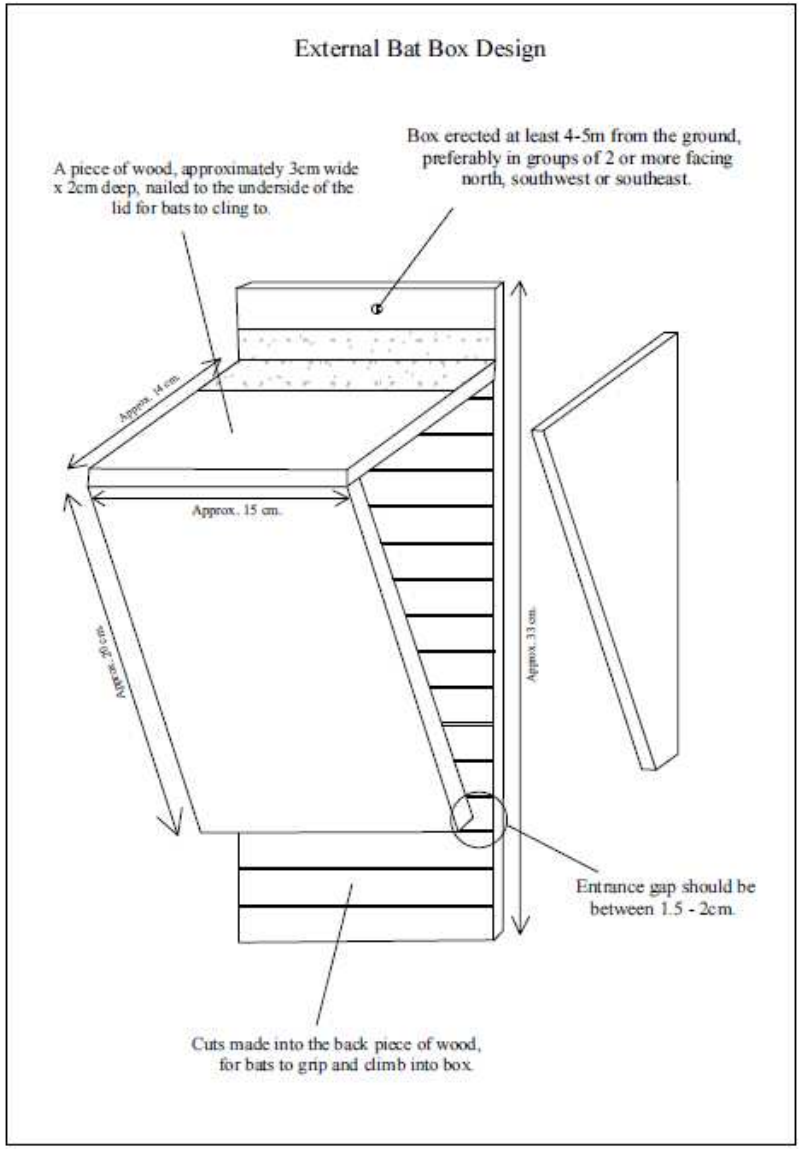
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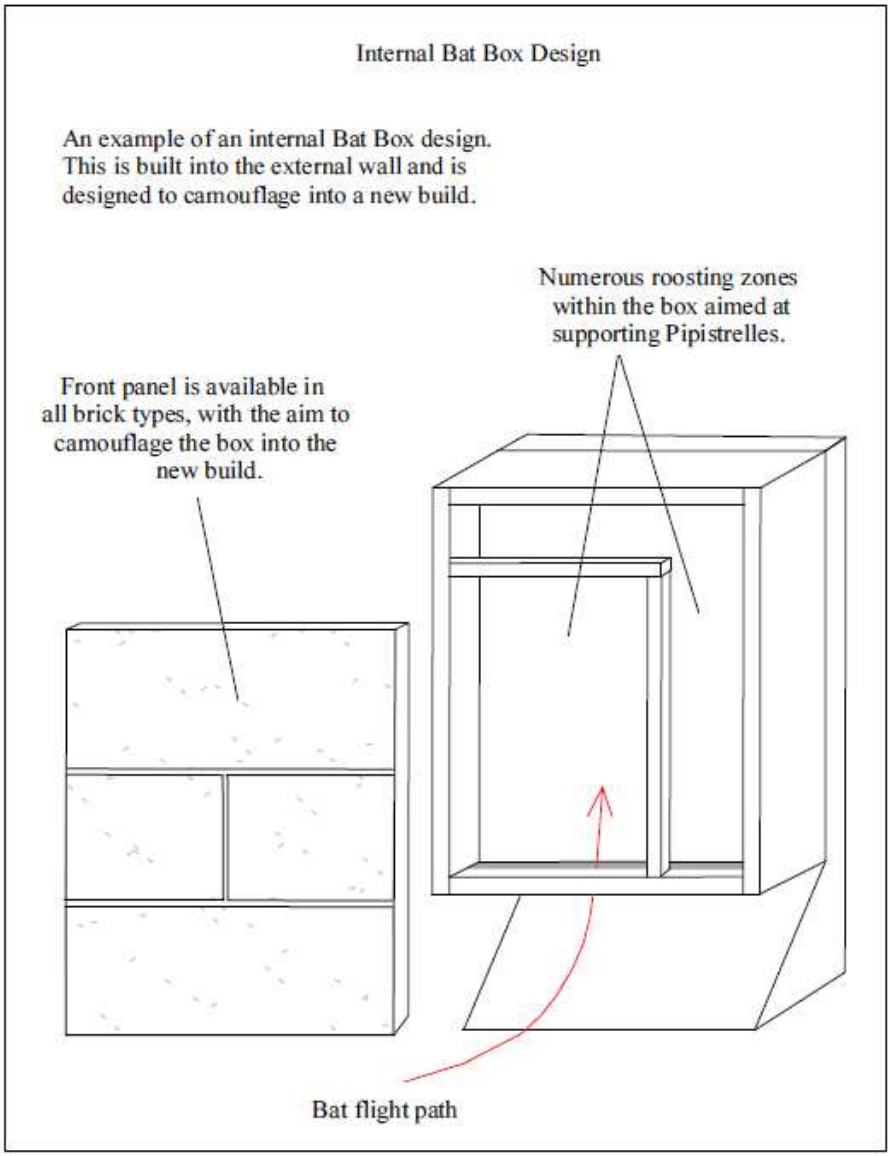






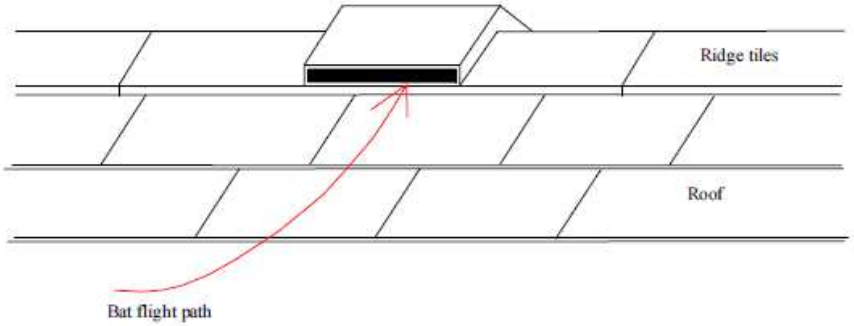
Appendix 3: Examples Artificial Bat Box Designs



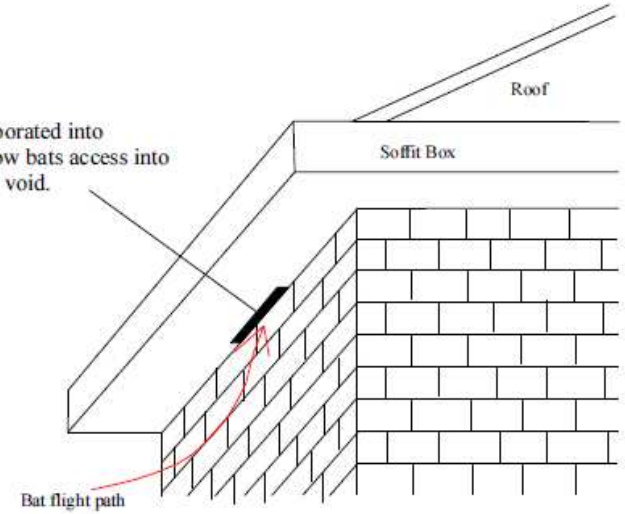


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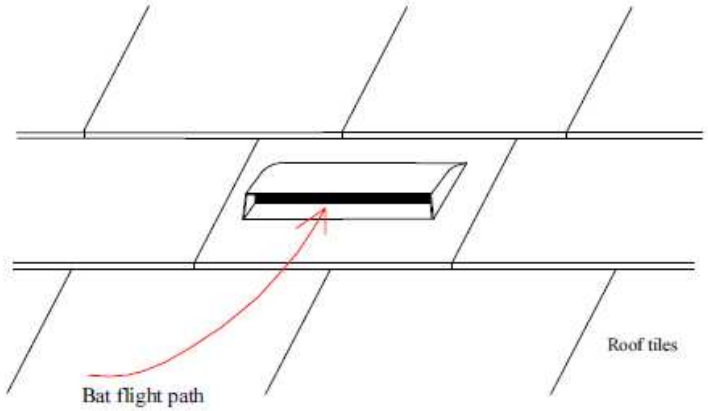
An example design for an artifical bat access point along the ridge tiles, allowing access into the loft space or roof insulation



Access slits incorporated into soffit boxes to allow bats access into the soffits internal void.

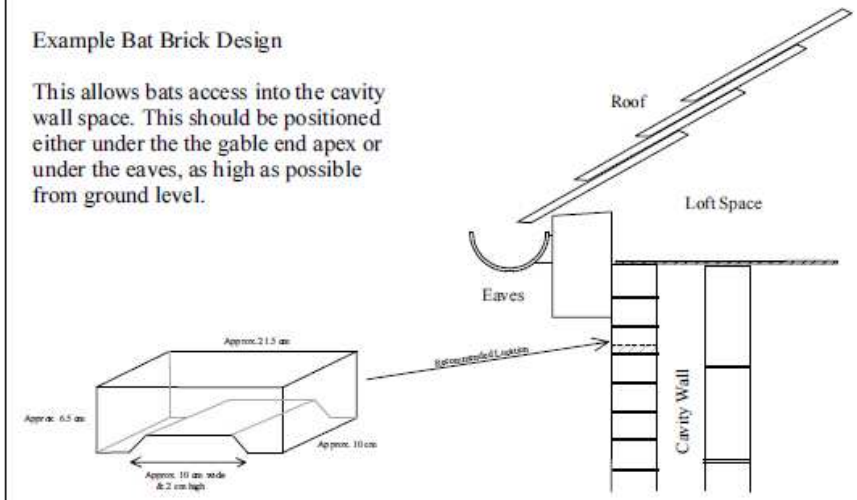


An example design for an artifical bat access point in the roof tiles. This typically consists of lead saddle and allows access into the loft space or insulation.



Example Bat Brick Design

This allows bats access into the cavity wall space. This should be positioned either under the the gable end apex or under the eaves, as high as possible from ground level.



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Appendix 4: Bat Ecology and Legislation

Bat Ecology

In the UK there are thought to be 18 native species of bat (17 known to be breeding), nearly all of which have experienced serious declines over the last century. All species are insectivorous and have evolved to hunt a different set of insects, present in different habitat types. Preferred bat habitat include, woodland, grassland, agricultural land, wetland and rivers. Bats typically roost close to foraging sites, and use linear features, such as hedgerows, tree lines and rivers to navigate. Removal of these linear features is thought to have a significant impact on their movement, which could be contributing to their decline. Bats will roost in a wide range of different sites including; built structures, underground sites and mature trees. Due to bats the bats ecology, different roost sites will be used at different times of the year. Known roost types include:

Hibernation roosts: November through to March
Temporary roosts: March to April and August to October
Maternity roosts: May through to August
Summer roosts (non-breeding): Used by males and immature females
Mating roosts: Around September and October

The two main roosts to be considered, with respect to buildings and development, are the maternity and hibernation roosts. Disturbance of these two roosts can have significant impacts on local bat populations. Maternity roosts are colonised around late May to early June and usually consist of mature females and their young. Females typically give birth to only one pup a year and disturbance during this time can result in females abandoning the roost and their young. Many species will use the same maternity roost year after year; the loss of a maternity roost can therefore have an enormous impact on the local population. Hibernation roots typically consist of underground sites, such as caves and cellars, where temperatures are low and relatively constant. Bats will hibernate to conserve energy over the winter months when falling temperatures cause a drop in the abundance of insects. Disturbing bats whilst hibernating may cause them to wake, wasting a lot of the bats energy reserves, reducing their chance of surviving the winter.

Bats and the Law

All bat species and their roosts in the UK are protected under European and UK law. The main piece of legislation protecting UK bats is the Conservation (Natural Habitats &c.) Regulations 1994 (better known as the Habitats Regulations). In addition to this bats and their roosts are also protected in England and Wales under the Wildlife and Countryside Act 1981 and The Countryside and Rights of Way Act 2000. Under these legislations, it is an offense to:

- Deliberately capture, injure or kill a bat.
- Deliberately disturb a bat in a way that would affect its ability to survive, breed or rear young (or hibernate or migrate in England, Wales and Northern Ireland) or (significantly in England, Wales and Scotland) affect the local distribution or abundance of the species.
- Damage or destroy a roost (this is an ‘absolute’ offence).
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat.
- Intentionally or recklessly disturb a bat at a roost.
- Intentionally or recklessly obstruct access to a roost.

If it is discovered that development may impact upon bat roosts (thus leading to an offence being committed) a mitigation plan should be devised and a Habitat Regulations derogation licence applied for from the relevant government department (i.e. Natural England). Gaining a licence will depend on many variables; such as species present, roost type, size and its local/regional/national importance.

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Appendix 5: Glossary

Activity surveys - are used to assess the level of bat activity at a site. This can be done either by using equipment such as an AnaBat device, or manually walking around a site, with a heterodyne detector, documenting the number of bat passes and interceptions.

Dawn surveys - begin around 2 hours before and up to sunrise, when bats are returning to their roosts from foraging and swarming behaviour can be seen close to roost entrances.

Dusk surveys - begin around 30 minutes before sunset and up to 2 hours afterwards. These are done in order to see bats emerging from their roost sites at night.

Echolocation – is a system similar to sonar, and allows bats to travel and forage even in total darkness. Bats make a call and then listen to the returning echoes in order to build up a map of their surrounding area. This allows bats to gauge what an object is and how far away it is, by how long sound takes to return to them.

Habitat - the ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

Hibernation - is a state of inactivity and metabolic depression characterized by lower body temperature, slower breathing, and lower metabolic rate. Hibernating animals conserve food, especially during winter when food is short, tapping energy reserves, body fat, at a slow rate.

Hibernation roost - typically consist of underground sites, such as caves and cellars, which remain relatively cold and humid. Bats will hibernate to conserve energy over the winter months when falling temperatures cause a drop in the abundance of insects. These will typically be colonised around November to around March.

Insectivorous – is when an organism feeds exclusively on insects.

Nocturnal - a behaviour characterized by being active during the night and sleeping during the day.

Maternity roosts – colonised around late May early June and consist of mature females and their young. These roosts need to be warm and quiet, and are used up until around August, with females typically leaving first and then the young.

Mating roosts – mating begins around late October to November; with males of most species using special mating calls to attract females. These can include purrs, clicks and buzzing.

Roost – a site where bats live during the day, rear young and hibernate. These can be in man made structures, such as buildings, bridges, tunnels, cellars and mines, or natural features such as mature trees and caves.

Roost in buildings – many types of buildings will be used by bats, the most likely sites are agricultural buildings (e.g. farmhouses and barns), buildings with exposed wooden beams (greater than 20cm thick), buildings with weather boarding and/or hanging tiles, and buildings close to woodland and/or water.

Roost in trees – these are typically in mature trees with deep sheltered cracks, under loose sections of bark, or in woodpecker holes.

Species – a group of organisms in which all members can interbreed and produce viable offspring.

Summer roosts (non-breeding) - these are generally occupied by groups of males and immature females during the summer, and are usually only occupied for a short period before the group moves to another location.

Swarming – a behaviour exhibited by bats returning to their roost sites at dawn. Bats can be seen repeatedly flying to and from the roost entrance, making it much easier for consultants to identify where roosts are on a building or structure.

Temporary/Transitory roosts – These are used after hibernation (March – April) before mature females disperse to maternity roosts and male/ immature females colonise summer (non-breeding) roosts. Similarly, temporary roosts form before hibernation (August -October).

Underground Roosts – these are typically used during the winter and can be mines, caves, tunnels or cellars.

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Appendix 6: References

Bat Mitigation guidelines (Jan. 2004). A. J. Mittchell-Jones. English Nature.

Bat Survey Guidelines: Good Practice Guidelines (2007). Bat Conservation Trust (BCT).

Bat Workers Manual (3rd Edition 2004). A. J. Mitchell-Jones& A. P. McLeish. Joint Nature Conservation Committee (JNCC).

Websites:

Bat Conservation Trust (BCT). <http://www.bats.org.uk/>

Google Maps. <http://maps.google.co.uk/>

Multiple-Agency Geographic Information for the Countryside (MAGIC). <http://www.magic.gov.uk/>

National Biodiversity Network (NBN) Gateway. <data.nbn.org.uk>

Natural England. < http://www.naturalengland.org.uk/>

Nature on the Map. Natural England. <www.natureonthemap.org.uk>

Relevant Legislation:

Wildlife and Countryside Act 1981 <http://jncc.defra.gov.uk/page-3614>

Conservation (Natural Habitats, &c.) Regulations 1994 (The Habitats Directive) (Amended 2010) <http://www.legislation.gov.uk/uksi/2010/490/contents/made>

Countryside and Rights of Way Act 2000 <http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga_20000037_en.pdf?view=interweave>

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I hope that this report provides all the necessary information, but should any further advice be needed please do not hesitate to contact the author.

Signed



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07 November 2012

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